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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/567,178	02/03/2006	Erlind M. Thorsteinson	62562A	6741

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UNION CARBIDE CHEMICALS AND
PLASTICS TECHNOLOGY CORPORATION
P.O. Box 1967
Midland, MI 48641-1967

EXAMINER	
MICALI, JOSEPH	
ART UNIT	**PAPER NUMBER**
1793	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/567,178	THORSTEINSON ET AL.	
	Examiner	Art Unit	
	Joseph V. Micali	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 April 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10 and 13-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10 and 13-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Application

The argumentation filed on April 30th, 2010 has been entered. Claims 1-10 and 13-15 remain pending and presented on the merits.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-2, 5-8, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,929,259 by Lockemeyer, in view of US Patent No. 4,118,588 by Fouquet et al and US Patent No. 4,944,589 by Notermann.

With respect to claims 1 and 5, Lockemeyer is drawn to the preparation of ethylene oxide and catalysts (**title**). Specifically, Lockemeyer discloses the formation of an alpha-alumina-based catalyst carrier (preformed, i.e. forming, shaping, drying, and firing) and subsequently impregnating with a titania modifier in an aqueous medium, calcining the impregnated carrier, and finally depositing silver catalytic material on the carrier (**column 2, lines 43-56 and claim 1**).

However, Lockemeyer is silent with regards to the modifier being selected from among alkali and alkaline earth metal silicates. Also, though Lockemeyer discloses shaping of the carrier, Lockemeyer is silent with regards to shaping into a lamellate or platelet morphology.

Fouquet is drawn to the manufacture of methacrylic acid and methyl methacrylate (**title**). However, Fouquet also gives knowledge in the catalyst arts on modifiers, and specifically discloses the selection of alkali metal and/or alkaline earth metal silicates as a suitable modifier for modified catalysts (**column 4, line 56 - column 5, line 2**).

At the time of invention it would have been obvious to a person of ordinary skill in the art to perform the process of Lockemeyer including a modifier being selected from among alkali and alkaline earth metal silicates, in view of the teaching of Fouquet. The suggestion or motivation for doing so would have been to select a modifier which improves the space-time yield of the catalyst (**Fouquet, column 4, line 62-63**).

Notermann teaches a process for epoxidation of an alkene including a supported silver catalyst (**title, abstract**). Specifically, the support consists essentially of alpha-alumina and the support particles have platelet-type morphology (**claim 1**).

At the time of invention it would have been obvious to a person having ordinary skill in the art to perform the process of Lockemeyer including a platelet morphology, in view of the teaching of Notermann. The suggestion or motivation for doing so would have been to improve crush strength, pore volumes, and surface areas, thereby providing high performance characteristics of short term stability or high activity and long term stability (**Notermann, column 13, lines 17-22**).

With respect to claim 2, as Fouquet explicitly discloses the selection of alkali and alkaline earth metal silicates as modifiers (**column 4, line 56 - column 5, line 2**), such a claimed group is rendered obvious to try by such a teaching, as each of the claimed compounds are alkali or alkaline earth metal silicates.

With respect to claims 6-8, Notermann recites at least one efficiency enhancing promoter selected from a group consisting of alkali metals, alkaline earth metals, and their cations (**column 9, lines 55-61**). Furthermore, Notermann discloses the efficiency enhancing promoter being a salt of a member of a redox-half reaction pair (**column 17, lines 10-45**).

With respect to claim 10, such a limitation is drawn toward intended use of the claim method (see the claim language of "a catalyst to be used for the vapor phase epoxidation of alkene"), and thus, does not impart any patentable relevance on the actual claim limitations, i.e. the process steps.

5. Claims 2-3 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,929,259 by Lockemeyer, in view of US Patent No. 4,118,588 by Fouquet et al and US Patent No. 4,944,589 by Notermann, as applied to claims 1, 5-8, and 10 above, and further in view of EP 1086743 by Mikawa et al.

With respect to claims 2-3, Lockemeyer, as combined, does not explicitly teach the selection of a modifier from the group of sodium silicates, lithium silicates, and potassium silicates, or mixtures thereof. Furthermore, it does not teach a sodium silicate modifier with stoichiometry, Na_2O-2.6SiO_2.

Mikawa teaches a method of making a catalyst for the production of epoxides by a vapor-phase oxidation of an unsaturated hydrocarbon, wherein a sodium silicate modifier along with an alpha-alumina carrier is used (**claim 8**). The modifier may be sodium silicate with a stoichiometry of Na_2O-2.6SiO_2 (**claim 4**).

At the time of invention it would have been obvious to a person having ordinary skill in the art to perform the modified process of Lockemeyer including a sodium silicate modifier, in view of the teaching of Mikawa. The suggestion or motivation for doing so would have been to provide a functional equivalent and "express suggestion to substitute one equivalent for another need not be present to render such substitution obvious" as stated in **MPEP 2143(B)**.

With respect to claim 15, Mikawa teaches washing a modified carrier after calcination (**example 1 of Mikawa, page 11, lines 13-15**).

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,929,259 by Lockemeyer, in view of US Patent No. 4,118,588 by Fouquet et al and US

Patent No. 4,944,589 by Notermann, as applied to claims 1-2, 5-8, and 10 above, and further in view of US Patent No. 6,103,916 by Takada et al.

With respect to claim 4, Lockemeyer, as combined, does not teach a drying conducted at a temperature not exceeding about 250°C for at least the first two hours following impregnation.

Takada is drawn to an alpha-alumina silver catalyst for the production of ethylene oxide and the method of production. Takada teaches a drying following impregnation at a temperature range of 100-400°C (**claim 8**), and specifically, a drying not exceeding 250°C for two hours (**column 3, lines 39-51**).

At the time of invention it would have been obvious to a person having ordinary skill in the art to perform the modified process of Lockemeyer including the drying being performed at 250°C, in view of the teaching of Takada. The suggestion or motivation for doing so would have been to provide an operating temperature required by Gerdes but not disclosed.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,929,259 by Lockemeyer, in view of US Patent No. 4,118,588 by Fouquet et al and US Patent No. 4,944,589 by Notermann, as applied to claims 1-2, 5-8, and 10 above, and further in view of EP 0480537 by Thorsteinson et al, with motivation supplied by US Patent No. 5,440,058 by Hoffman et al.

With respect to claim 9, Lockemeyer, as combined, does explicitly teach an efficiency enhancing promoter being a salt of a member of a redox-half reaction pair (see Notermann), but does not teach the specific promoter component including rhenium.

Thorsteinson is drawn to a stable alkylene oxide catalyst, with shared inventors of the current application. Thorsteinson recites the inclusion of an efficiency enhancing promoter being a salt of a member of a redox-half reaction pair (**claim 1**) as well as rhenium (**claim 1**).

At the time of invention it would have been obvious to a person having ordinary skill in the art to perform the modified process of Lockemeyer with the addition of a salt of member of a redox-half reaction pair or a rhenium component as an efficiency enhancing promoter, in view of the teaching of Thorsteinson. The suggestion or motivation for doing so would have been to make this connection is to improve vapor phase epoxidation (**US Patent No. 5,440,058 to Hoffman et al**, **column 3, line 57 – column 4, line 12**).

8. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,929,259 by Lockemeyer, in view of US Patent No. 4,118,588 by Fouquet et al and US Patent No. 4,944,589 by Notermann, as applied to claims 1, 5-8, and 10 above, and further in view of US Patent No. 5,187,140 by Thorsteinson et al.

With respect to claim 13, Lockemeyer discloses a preformed alpha-alumina carrier with alumina at least 95% by weight (**column 2, line 43, and column 4, line 62 – column 5, line 8**), with a surface area at least 0.5 m^2/g (**column 4, lines 8-18**) and an explicit teaching of how surface area directly relates to porosity (**column 4, lines 51-61**).

However, Lockemeyer doesn't explicitly teach the specifically claimed pore volume and median pore diameter.

Thorsteinson recites a carrier where carrier particles having a particle size greater than about 0.1 microns, a substantially flat major surface of platelet-type morphology, where with the

platelet-type morphology, a pore volume is 0.5-2.0 cc/g (**column 6, lines 44-46**) and a pore diameter is less than 50 microns, preferably less than 20 microns (**column 6, lines 34-37**).

At the time of invention it would have been obvious to a person having ordinary skill in the art to perform the modified process of Lockemeyer with the specifically claimed pore volume and median pore diameter, in view of the teaching of Thorsteinson. The suggestion or motivation to do so would have been to specify a pore volume and pore diameter required by Lockemeyer but not disclosed, and use of a known technique in the art to produce predictable results with an expectation of success with regards to known particle morphologies.

9. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,929,259 by Lockemeyer, in view of US Patent No. 4,118,588 by Fouquet et al and US Patent No. 4,944,589 by Notermann, and further in view of US Patent No. 5,187,140 by Thorsteinson et al, as applied to claim 13 above, and further in view of EP 1086743 by Mikawa et al.

With respect to claim 14, Lockemeyer, as combined, does not explicitly teach the selection of a modifier from the group of sodium silicates, lithium silicates, and potassium silicates, or mixtures thereof. Furthermore, it does not teach a sodium silicate modifier with stoichiometry, Na_2O-2.6SiO_2.

Mikawa teaches a method of making a catalyst for the production of epoxides by a vapor-phase oxidation of an unsaturated hydrocarbon, wherein a sodium silicate modifier along with an alpha-alumina carrier is used (**claim 8**). The modifier may be sodium silicate with a stoichiometry of Na_2O-2.6SiO_2 (**claim 4**).

At the time of invention it would have been obvious to a person having ordinary skill in the art to perform the modified process of Lockemeyer including a sodium silicate modifier, in view of the teaching of Mikawa. The suggestion or motivation for doing so would have been to provide a functional equivalent and "express suggestion to substitute one equivalent for another need not be present to render such substitution obvious" as stated in **MPEP 2143(B)**.

Response to Arguments

10. Applicant's arguments filed on April 30th, 2010 have been fully considered but they are not persuasive.

With regards to applicant's argumentation against the reference of Lockemeyer, applicant argues a "teaching away" argumentation. Firstly, this is not persuasive because in order for a reference to teach away, it must teach, suggest, or imply that the reaction of the titania modifier and alumina carrier cannot be used. To say it is undesirable cannot be the grounds for a "teaching away" argument. As defined by the intellectual property law glossary, "teaching away" is defined as the situation in which a prior art reference suggests that the claimed invention in not possible. That is not the instant situation. Secondly, even if such a "teaching away" argument is persuasive, MPEP 2141.02 [R-5] Section VI states, "A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention." Further, applicant's argumentation is not persuasive, as it attacks a single reference when the rejection is based on the combination of multiple references, and thus, in response to applicant's arguments against the references individually (Lockemeyer), one cannot show nonobviousness by attacking references individually where the rejections are based on

combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

With regards to applicant's argumentation on the reference of Fouquet, applicant once again argues in a piecemeal fashion. As such, in response to applicant's arguments against the references individually (Fouquet), one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Primary reference Lockemeyer already discloses a modifier on the carrier. Further, in the same vein, and in response to applicant's argument that Fouquet is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, applicant attempts to differentiate on the basis of Fouquet disclosing catalysts, specifically supported catalysts, while the instant invention is drawn to catalyst carriers. This is not persuasive, as clearly both are in the same field of endeavor.

With regards to applicant's argumentation on the reference of Notermann, applicant does not give clear argumentation, and more importantly, does not even address examiner's purpose/ rationale for using Notermann, i.e. the platelet morphology. Thus, such argumentation is not pertinent, nor persuasive.

With regards to applicant's argumentation on the secondary rejection using Mikawa, applicant again attempts to render the reference of Mikawa void as non-analogous art. In

response to applicant's argument that Mikawa is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, examiner maintains the usage of Mikawa, as it is drawn to a method in the modified catalyst arts, wherein a sodium silicate modifier along with an alpha-alumina carrier is used. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Applicant's grounds of argumentation against Mikawa are not persuasive, as it takes a teaching specific to Mikawa and attempts to render the combination unsatisfactory because Mikawa makes such a teaching, which is unrelated to the current invention, or for that matter, to the examiner's combination/rejection at hand, and thus, unconvincing.

Finally, in response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Conclusion

11. Claims 1-10 and 13-15 are rejected.

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph V. Micali whose telephone number is (571) 270-5906. The examiner can normally be reached on Monday through Friday, 7:30am to 5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry A. Lorengo can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Joseph V Micali/
Examiner, Art Unit 1793

/J.A. LORENGO/
Supervisory Patent Examiner, Art Unit 1793